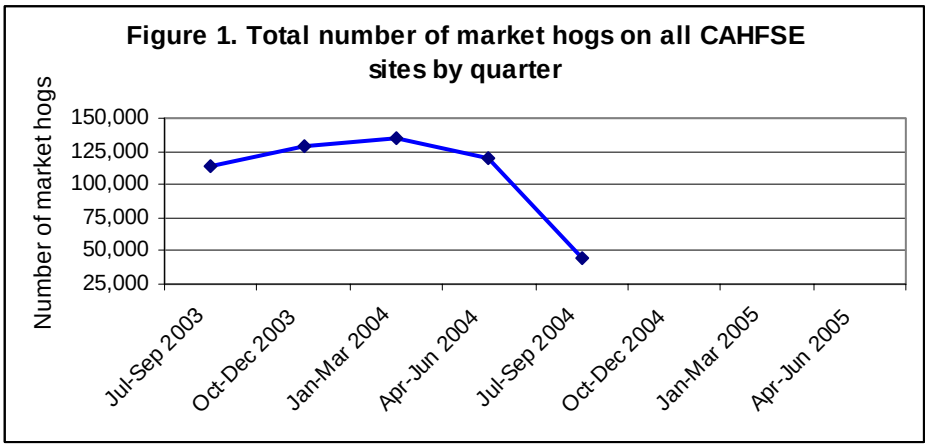
CAHFSE Quarterly Report

July 1 – September 30, 2004

CAHFSE is a joint effort among three agencies of the United States Department of Agriculture: the Animal and Plant Health Inspection Service (APHIS), the Agricultural Research Service (ARS), and the Food Safety and Inspection Service (FSIS). The mission of this important surveillance effort is: (1) to enhance overall understanding of bacteria that pose a food-safety risk by monitoring these bacteria on-farm and in-plant over time, and (2) to provide a means to routinely monitor critical diseases in food-animal production. A particular emphasis of CAHFSE is to address issues related to bacteria that are resistant to antimicrobials. Swine is the first commodity studied as part of the CAHFSE program. Swine herds that meet certain criteria (geographic location and production style) are solicited to participate in the program for a 2-year period. Herds are visited quarterly for data and sample collection.

Reporting Units

Figure 1 shows the aggregate number of market hogs on all CAHFSE sites over time. These inventory numbers will be larger than those shown in Table 1, which reports only sites where fecal samples were collected. This graph may rise with the addition of more sites to CAHFSE or with the substitution of larger sites in CAHFSE.



NOTE: CAHFSE sites in North Carolina and Texas did not participate in the July-September 2004 period.

Table 1 shows the number of sites where fecal samples were collected during the reference quarter. The total number of sites in this table may be less than the total number of sites participating in the CAHFSE project as some sites may not have had market hogs eligible for fecal sampling at the time of the visit. The third column shows the total number of market hogs on the sites where fecal sampling occurred in each of the States. The fourth column shows the number of pens where fecal samples were collected. The last column shows the number of market hogs present in the pens where fecal samples were collected.

Table 1. Structure of the coverage population*

	Sites		Pens	
State	Number of sites	Market hog inventory	Number of pens	Market hog inventory
IA	7	15,213	43	4,040
MN	9	16,380	73	3,133
NC^	-	-	-	-
TX^	-	-	-	-
Total	16	31,593	116	7,173

*for sites where fecal samples were collected
^ no samples for North Carolina and Texas during this time period

To represent the diversity of swine production facilities, some farrow-to-finish sites were enrolled in CAHFSE as well as sites that had only weaned market hogs. Likewise some indoor-only sites were enrolled as were some sites where hogs had outdoor access. Figure 2 shows the number of the sites sampled this quarter (i.e., sites where fecal samples were collected) with sows present or where hogs had outdoor access.

Figure 2. Characteristics of the covered population this quarter

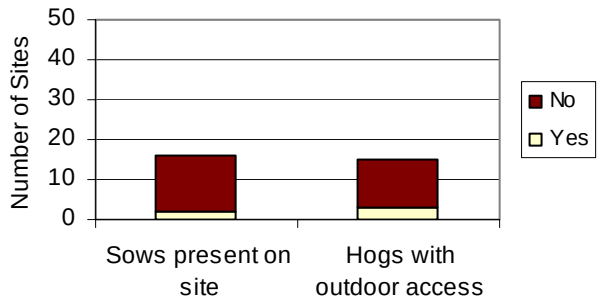


Figure 3. Average age of pigs in sampled pens this quarter

Figure 3 shows the number of pens sampled this quarter by the average age of hogs in those pens. The goal of CAHFSE was to collect fecal samples from pens of hogs nearing the end of the finishing phase, i.e., approximately 22 weeks of age or older.

Enteric organisms

Table 2 shows prevalence of enteric organisms cultured from fecal samples.

Table 2. Summary of isolation of enteric organisms from fecal samples

Organism	Number of samples tested	Number of positive samples	Number of samples with multiple isolates	Number of isolates	Percent samples positive
Salmonella	620	34	0	34	5.5%
Campylobacter	248	172	0	172	69.4%
E. coli	248	221	0	221	89.1%
Enterococcus	248	138	0	138	55.6%

Figure 4 shows the prevalence of each enteric organism in fecal samples by quarter.

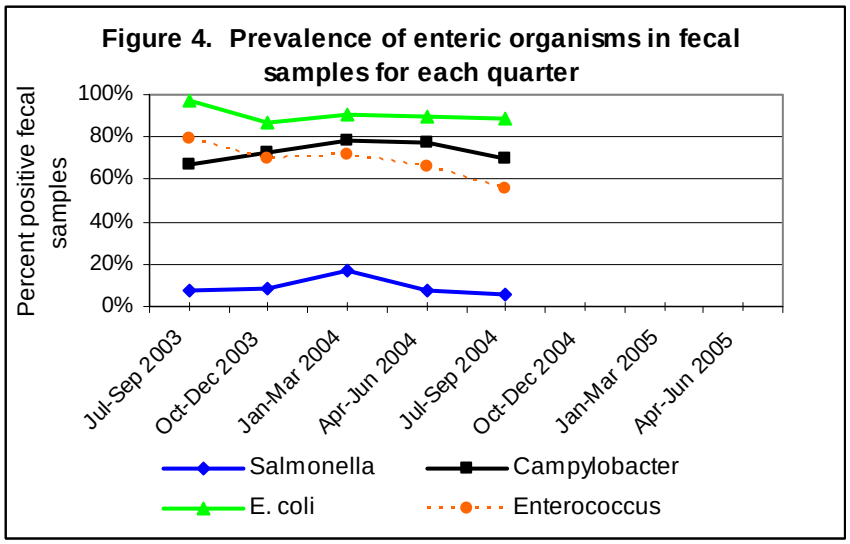
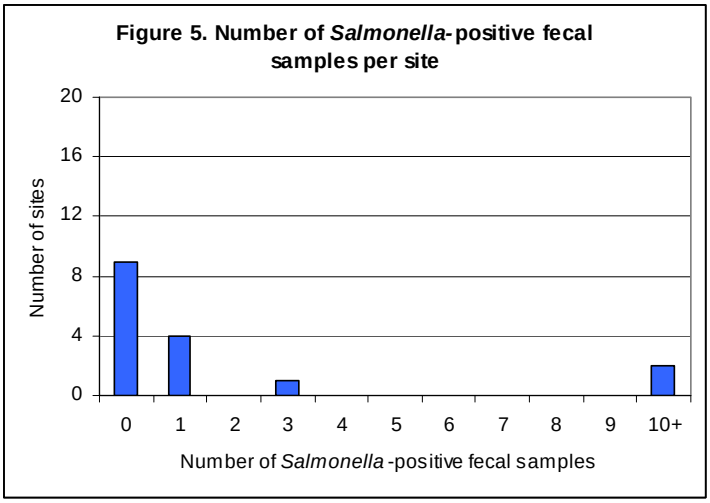


Table 3 shows the site and pen prevalence of *Salmonella* recovery from fecal samples collected this quarter.

Table 3. Number of fecal samples collected and *Salmonella* prevalence per site and per pen

State	Number of samples collected	Number of sites*	Number of sites positive for *Salmonella*	Number of pens	Number of pens positive for *Salmonella*
Total	620	16	7	116	17
* no samples for North Carolina and Texas during this time period					

Figure 5 shows the number of sites with various numbers of *Salmonella*-positive fecal samples this quarter.



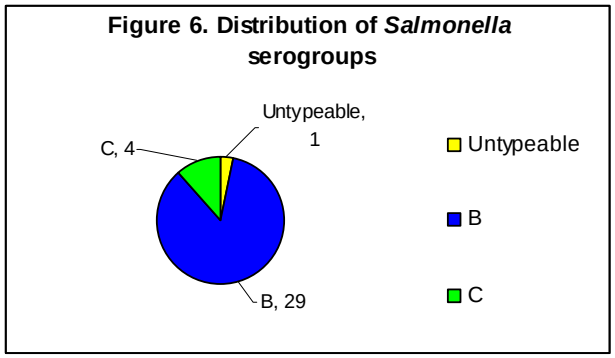


Figure 6 shows the *Salmonella* serogroups represented in positive fecal cultures this quarter.

Table 4 shows the most common *Salmonella* serotypes identified and the number of sites where these samples were isolated.

Table 4. Frequency of *Salmonella* serotypes cultured

Salmonella serotype	Number of isolates	Number of sites
Derby	29	4
Mbandaka	3	1
Newport	1	1
untypeable	1	1
Total	34	16

Antimicrobial Resistance—Salmonella

Table 5 shows the percent of all *Salmonella* isolates from fecal samples that were resistant to each of the antimicrobial drugs on the panel. For the purpose of this analysis, isolates that were classified as 'intermediate' were considered susceptible.

Table 5. Number and percent of *Salmonella* isolates from fecal samples resistant to each antimicrobial tested

Antibiotic	Number of isolates resistant	Percent of isolates resistant
Amikacin	0	0.0%
Amoxicillin/clavulanic acid	1	2.9%
Ampicillin	1	2.9%
Cefoxitin	1	2.9%
Ceftiofur	1	2.9%
Ceftriaxone	0	0.0%
Cephalothin	1	2.9%
Chloramphenicol	1	2.9%
Ciprofloxacin	0	0.0%
Gentamicin	0	0.0%
Kanamycin	11	32.4%
Nalidixic acid	0	0.0%
Streptomycin	4	11.8%
Sulfamethoxazole	3	8.8%
Tetracycline	28	82.4%
Trimethoprim/sulfa	0	0.0%

Figure 7 shows the percent of *Salmonella* isolates from fecal samples that were resistant to the specified number of antimicrobials.

Figure 7. Percent of *Salmonella* isolates from fecal samples resistant to the specified number of antimicrobials